

Remarks

Claims 1, 3-41, and 43-99 are pending in the application. Claims 2 and 42 have been canceled. Claims 1, 6, 7, 11, 13, 14, 16, 20, 26-28, 33, 34, 36, 38, 40, 41, 43, 48-50, 52, 56, 79, and 80 have been amended. New claims 83-99 have been added. The drawings have been amended as attached to correct errors in the numerals. The specification has been amended to correct minor errors identified by the Examiner and to correct other minor errors. No new matter has been added by virtue of this amendment. Reconsideration of the application as amended is requested.

Drawings

The Examiner objects to the drawings because of informalities. Corrections to the FIGS. 6 and 7 are attached.

Specification

The Examiner objects to the disclosure because of informalities. The specification has been amended to fix the informalities identified by the Examiner and to fix other errors.

Claim Objections

The Examiner objects to claims 1, 40, 6, 16, 7, 38, 48, 49, 56, and 80 because of informalities. The claims have been amended to fix the informalities identified by the Examiner and to fix other errors.

Claim Rejections--35 U.S.C. § 112 second paragraph

The Examiner rejects claims 20 and 40-82 under 35 U.S.C. § 102(e), as being indefinite. The claims have been amended to fix the problems cited by the Examiner.

Claim Rejections--35 U.S.C. § 102(e)

The Examiner rejects claims 1-4, 13, 25, 28-30, 32, and 39 under 35 U.S.C. § 102(e), as being anticipated by van Lummel. However, claim 1, as amended provides:

1. (currently amended) A device for attaching to a living subject having a joint,

comprising a first sensor, a second sensor, a processor, and a non-volatile storage device, said first sensor for attaching to a first body segment above the joint, said second sensor for attaching to a second body segment below the joint, wherein said first sensor and said second sensor each comprise a solid state inclination measuring device for determining inclination with respect to the gravity vector, wherein said inclination with respect to the gravity vector determined data from said first sensor and from said second sensor is processed in said processor and stored in said non-volatile storage device for distinguishing lying, sitting, and standing positions, wherein said processor and said non-volatile storage device are part of the device for attaching to the living subject.

First, as described in claim 1, the present invention uses inclination data “for distinguishing lying, sitting, and standing positions.” The device of van Lummel, by contrast is used to take measurements while the subject is performing activities including walking, . . . sitting down, on a chair, getting up from a chair, lying down on a bed, getting up from a bed. Van Lummel does not teach or suggest **distinguishing lying, sitting, and standing positions**. Van Lummel is concerned with making measurements of velocity and movement intensity while the subject is getting into various positions or moving in one of the positions. There is **no teaching or suggestion as to how to detect which position the subject is in or how to distinguish one position from another**.

Second, claim 1 of the present invention, as amended, is also clearly distinguished from van Lummel by having the processor and non-volatile storage device part of the device for attaching to the living subject, along with the sensors. Van Lummel does not teach or suggest the idea of claim 1, as amended, of providing that “said processor and said non-volatile storage device are part of the device for attaching to the living subject.” There is no teaching or suggestion that the programmed computing device is part of the device illustrated in van Lummel’s FIG. 1. There is no teaching or suggestion as to how to provide the required computing device integrated with the sensors. Van Lummel makes explicit that “data of the at least one sensor are inputted into a suitably programmed computing device” (Col 1, lines 38-40). Van Lummel also provides that “the measuring data of the sensor are inputted into a computing device and are subsequently compared to corresponding reference data inputted into the computing device” (abstract). Thus, van Lummel suggests, in fact, that the computing device is separate. Therefore the rejection of claim 1, and claims dependent thereon, as anticipated by van Lummel under 35 U.S.C. § 102(e), have been traversed.

Third, there is no teaching or suggestion in van Lummel of the sensors being solid state inclination measuring devices for determining inclination with respect to the gravity vector, as provided in claim 1, as amended. In van Lummel, mutually orthogonal accelerometers are for measuring “the characteristic movement intensity” (col. 4, lines 34-39). There is no teaching or suggestion of using the accelerometers to determine inclination with respect to the gravity vector, and from that to distinguish lying, sitting,

and standing positions, as described in claim 1. Therefore the rejection of claim 1, and claims dependent thereon, as anticipated by van Lummel under 35 U.S.C. § 102(e), has been traversed.

The Examiner rejects claims 1, 5-16, 25-27, and 35-38 under 35 U.S.C. § 102(e), as being anticipated by Hutchings. The Examiner states that Hutchings teaches a device, "wherein said first sensor and said second sensor each comprise an inclination measuring device (48, and col. 14, lines 17-45 and col. 20 lines 26-48), wherein data from said first sensor and from said second sensor is processed in said processor and stored in said storage device (col 24, lines 14-31) for distinguishing lying, sitting, and standing positions, as described in claim 1.

However applicant would respectfully ask the Examiner to consider that claim 1, as amended provides, "wherein said first sensor and said second sensor each comprise an inclination measuring device for determining inclination with respect to the gravity vector, wherein said inclination with respect to the gravity vector data from said first sensor and from said second sensor is processed in said processor and stored in said non-volatile storage device for distinguishing lying, sitting, and standing positions. . .

Hutchings does not teach or suggest providing sensors each comprising "an inclination measuring device for determining inclination with respect to the gravity vector," and for using the inclination with respect to the gravity vector information "for distinguishing lying, sitting, and standing positions." Hutchings teaches against using the information with respect to the gravity vector linear accelerometers could provide. "Since linear accelerometers also record gravity, it is necessary to keep track of the contribution of gravity to the accelerometers **and remove it from measurements**"(col. 10, lines 37-39).

Hutchings is not interested in measuring the actual inclination, as provided in claim 1 of the present invention. Hutchings only discloses measuring **the incremental** change in rotation of a moving object, and for that he removes the information about the actual orientation at any moment in time. Hutchings uses accelerometers to measure dynamic motion to determine length of each step, height jumped, speed, running elapsed time, and distance traversed. There is no teaching or suggestion in Hutchings to analyze data from two sensors or use inclination data obtained from the two sensors to determine inclination with respect to the gravity vector. Nor is there teaching or suggestion in Hutchings to use such inclination with respect to the gravity vector data to distinguish lying, sitting, or standing positions. Therefore the rejection of claim 1, and claims dependent thereon, as anticipated by Hutchings under 35 U.S.C. § 102(e), has been traversed.

The Examiner rejects claims 1-3, 15, 17-21, 23, 24, and 80 under 35 U.S.C. § 102(e), as being anticipated by Jacobson.

While Jacobson can distinguish "the soldier's position (i.e. whether standing or in a prone position)" (col. 6, lines 27-28), applicant would respectfully ask the Examiner to consider that all of Jacobson's sensors, 22, 24, 26, 30 are above the hip. Therefore, there is no way for Jacobson to distinguish standing from sitting, as provided in claim 1. Nor is there any motivation in Jacobson to provide for distinguishing standing from sitting. Nor is there any other teaching or suggestion as to how to distinguish standing from sitting in Jacobson. Therefore the rejection of claim 1, and claims dependent thereon, as anticipated by Jacobson under 35 U.S.C. § 102(e), has been traversed.

As to claim 80, applicant would respectfully ask the Examiner to consider that applicant was able to find no mention of sitting in Jacobson. And applicant was further able to find no mention of determining body posture in a sitting position in Jacobson. Furthermore, claim 80, depends on independent claim 40, and the Examiner has not indicated that Jacobson discloses the limits of claim 40.

The Examiner rejects claims 1, 33, 34, 40, 48-50, 74-75 under 35 U.S.C. § 102(e), as being anticipated by LaCourse

LaCourse discloses a single chip computer system, microprocessor 14 which contains its own ROM and RAM. However, LaCourse does not teach or suggest providing any other memory, such as the non-volatile memory of claim 1. LaCourse teaches against the use of non-volatile memory, providing in FIG. 6 and in column 6, lines 34-36 for the power button to be turned off so that "the memory inside microprocessor 14 is reset in step 74 and the sampling time is initialized to zero in step 76." This resetting of the memory by turning off the power would not be possible if the data were stored in non-volatile memory. Thus, it would not be obvious to replace the dynamic memory of LaCourse with non-volatile memory.

LaCourse further discloses mercury switches for measuring angles ranging from 45 degrees to 180 degrees to -45 degrees. As the Examiner recognizes, LaCourse does not teach or suggest the inclination device being a solid state device, as provided in claim 1, as amended. The limits of claim 2 have been included in claim 1 and claim 2 has been canceled. Similarly the limits of claim 42 have been included in claim 40 and claim 42 has been canceled.

Therefore the rejection of claims 1 and 40, and claims dependent thereon, as anticipated by LaCourse under 35 U.S.C. § 102(e), have been traversed.

The Examiner rejects claims 40-44, 48, 54-73, and 81-82 under 35 U.S.C. § 102(e), as being anticipated by Brann. As amended claim 40 provides,

40. A device comprising a solid state sensor, a processor, a non-volatile storage device, and a feedback mechanism wherein data from said sensor is processed in

said processor to provide an output, wherein said output is stored in said non-volatile storage device as a function of time, and wherein multiple points of said time dependent output stored in said non-volatile storage device are processed in said processor, wherein said processor is programmed to direct said feedback mechanism to provide information or instruction in response to said multiple points of time dependent output indicating **inactivity**, or activity of a joint during an interval of time that is **less than a preset level of activity**, or a range of motion of a joint during an interval of time that is **less than a preset range of motion**, or vibration during an interval of time that is **greater than a preset amount of vibration**.

 Brann does not teach or suggest the limits of claim 40, “wherein said processor is programmed to direct said feedback mechanism to provide information or instruction in response to said multiple points of time dependent output indicating inactivity, or activity of a joint during an interval of time that is less than a preset level of activity, or a range of motion of a joint during an interval of time that is less than a preset range of motion, or vibration during an interval of time that is greater than a preset amount of vibration.” Therefore the rejection of claim 40 and claims dependent thereon, as anticipated by Brann under 35 U.S.C. § 102(e), has been traversed.

Claim Rejections--35 U.S.C. § 103(a)

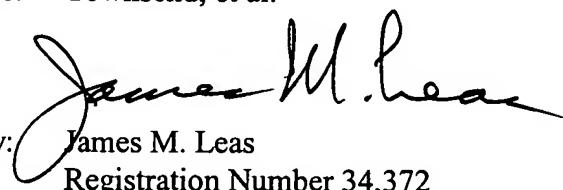
 The Examiner rejects claims 22 and 31 under 35 U.S.C. § 103(a), as being unpatentable over Jacobson in view of Brann. Claim 1, as amended, is clearly distinguished from the teachings of Jacobson and Brann. Neither reference individually or in combination teaches or suggests providing two sensors across a joint for distinguishing the sitting position. Therefore the rejection of claim 1 and claims dependent thereon, including claims 22 and 31 as being unpatentable over Jacobson in view of Brann under 35 U.S.C. § 103(a), has been traversed.

 The Examiner also rejects claims 45-47, 49, 51-53, 76-79 under 35 U.S.C. § 103(a), as being unpatentable over Brann in view of Hutchings. However, applicant would respectfully ask the Examiner to consider that neither Brann nor Hutchings, individually or in combination, teach or suggest the limits of claim 40, “wherein said processor is programmed to direct said feedback mechanism to provide information or instruction in response to said multiple points of time dependent output indicating **inactivity**, or activity of a joint during an interval of time that is **less than a preset level of activity**, or a range of motion of a joint during an interval of time that is **less than a preset range of motion**, or vibration during an interval of time that is **greater than a preset amount of vibration**.” Therefore the rejection of claim 40 and claims dependent thereon, including claims 45-47, 49, 51-53, 76-79 under 35 U.S.C. § 103(a), as being unpatentable over Brann in view of Hutchings has been traversed.

Applicant has reviewed the prior art made of record but not relied upon. These references are no more relevant than the prior art relied upon.

It is believed that the claims are in condition for allowance. Therefore, applicant respectfully requests favorable reconsideration. If there are any questions please call applicant's agent at 802 864-1575.

Respectfully submitted,
For: Townsend, et al.

By: 
James M. Leas
Registration Number 34,372
Tel: (802) 864-1575

James M. Leas
37 Butler Drive
S. Burlington, Vermont 05403